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EXAMINER

HUNG, YUBIN

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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/945,295	PETTITT, GREGORY S.	
	Examiner	Art Unit	
	Yubin Hung	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-13,16 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-13,16 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment/Argument

1. This action is in response to amendment filed 04/27/07, which has been entered.
2. Examiner acknowledges the receipt of Notice of Appeal, also filed 04/27/07.
3. Claims 1, 4-13, 16 and 18 are still pending.
4. Applicant's arguments regarding the availability of the Mendelson reference (US 6,054,832), with respect to the rejection(s) of claims 1, 4-13, 16 and 18 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Mendelson et al. (US 6,559,826). See below.
5. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and in view of Mendelson et al. (US 6,559,826).

8. Regarding claim 1, Oguchi discloses

- Providing at least two projectors [Fig. 1, numerals 2 (projectors), 8 (Processing unit); Col. 5, lines 38-56. Note that each processing unit is considered part of the projector since they are coupled to each other]
- communicating each projector's chromaticity data to a main controller [Fig. 1, refs 4 & 5 (considered a controller composing refs. 6 and 7); Figs. 2 & 3; Col. 5, lines 46-50; Col. 9, lines 6-23. Note that the chromaticity sensors send chromaticity data of their respective projector to a main controller]
- determining a standard color gamut achievable by each projector [Col. 3, lines 8-10; Col. 7, lines 41-60, especially lines 55-60. Note that the common color production region correspond to a standard gamut of the projectors]
- calculating color correction data for each projector based on that projector's chromaticity data and on said standard color gamut [Col. 6, line 1 through Col. 8, line 40, especially Equations 1-10. Note that M_{nt} corresponds to the color correction data of the n^{th} projector]
- calculating image pixel values based on input image data and said color correction data [Col. 2, lines 42-46 (each projector/processing unit calculates its own corrected pixels for display); Col. 8, lines 51-53]

Oguchi does not expressly disclose that each projector has chromaticity data of and luminance data (relative luminance of colors) generated by that projector stored therein and that the luminance data is also communicated to the main controller to calculate color correction.

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However, Mendelson discloses storing device colorimetric profile (including both color and luminance information) needed for producing accurate color in that device. [Fig. 6, ref. 595 and Fig. 7, ref. 595b (storage for device color profile); Figs. 9 & 11; Col. 10, lines 5-13 & 35-66, especially lines 56-62.]

Oguchi and Mendelson are combinable because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Oguchi with the teachings of Mendelson by storing information needed for color correction in that device (e.g., projector). The motivation would have been to make the information accessible to the controller during color calibration, as Mendelson indicates in Col. 3, lines 15-19.

Therefore, it would have been obvious to combine Mendelson with Oguchi to obtain the invention of claim 1.

9. Claims 4, 10, 12, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Mendelson et al. (US 6,559,826) as applied to claim 1 above, and further in view of Sato (US 6,467,910).

10. Regarding claim 4, the combined invention of Oguchi and Mendelson discloses all limitations of its parent, claim 1.

The combined invention of Oguchi and Mendelson does not expressly disclose the following, which Sato teaches

- each said projectors include spatial light modulators at which light is directed from a light source through a rotating color wheel and wherein said stored luminance data for a projector represents effective light times of each color of a color wheel for that projector relative to a base wheel rate [Fig. 19, refs. 11 (light source), 36 (color wheel) and 16 (spatial light modulator); Col. 13, line 30-37. Note that for a projector using a light wheel and an SLM, its luminance represents the effective light times of each color. Note further that per the analysis of claim 1 luminance data is stored in each projector]

The combined invention of Oguchi and Mendelson is combinable with Sato because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi and Mendelson with the teachings of Sato as recited above. The motivation would have been to create three independent single-color images in order to form a full-color image, as is well known in the art (and is also indicated in Col. 1, lines 6-29 of Sato).

Therefore, it would have been obvious to combine Sato with Oguchi and Mendelson to obtain the invention of claim 4.

11. Regarding claim 10, Sato further discloses

- generating images at each projector, from the calculated image pixels, and using a spatial light modulator
[Fig. 19 (image-generating projector) and Col. 13, lines 21-37. Note that per the analysis of claim 1 Oguchi discloses that image pixels to be displayed are calculated at each projector (see Oguchi: Col. 2, lines 42-46 (each projector/process calculates its own corrected pixels for display))]

12. Regarding claim 12, the combined invention of Oguchi, Mendelson and Sato

further discloses

- at least two projectors, each operable to generate a portion of an image
[Oguchi: Fig. 1, numerals 2 (projectors), 8 (Processing unit); Col. 5, lines 38-56. Note that each processing unit is considered part of the projector since they are coupled to each other]
- each projector comprising a spatial light modulator for generating its portion of the image responsive to each color component of pixel values and a memory for storing chromaticity data and luminance data for that projector
[Sato: Fig. 19. See also the analyses of claim 1 regarding storing each projector's chromaticity data and luminance data (implying the existence of a memory) and claim 4 regarding the use of a spatial light modulator]
- a main controller coupled to each projector to receive stored chromaticity and luminance data, have circuitry to generate color correction data and communicate corrected pixel value to the projector, the main controller comprising circuitry for generating color correction data for each projector based on the received chromaticity and luminance data, and for communicating the color correction data for each projector to that projector
[Oguchi: Fig. 1, ref. 5 (the circuitry is considered the main controller composing refs. 6 and 7); Col. 5, lines 35-67 and Col. 6, line 1 through Col. 8, line 55, especially Equations 1-10 describes the calculation and communication of color correction data in details. See also the analysis for claim 1]
- wherein each projector further comprises circuitry for calculating corrected pixel values based on said color correction data
[Oguchi: Fig. 1, refs. 2 & 8 (Note that each processing circuitry 8 is considered part of the projector 2 since they are coupled to each other); Col. 2, lines 42-46 (each projector/processing circuitry calculates its own corrected pixels for display); Col. 8, lines 51-53]

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13. Regarding claim 13, note that Sato further discloses a light source [Fig. 19, ref. 11], a color wheel disposed as recited [Fig. 19, ref. 36] and a spatial light modulator [Fig. 19, ref. 16; note that Col. 1, lines 13-15 teaches using a digital micro-mirror device for an SLM]. (Note: the three devices collectively are considered a spatial light modulator.)

14. Claim 16 is similarly analyzed and rejected as per the analyses of claims 4 and 12.

15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Mendelson et al. (US 6,559,826) as applied to claim 1 above, and further in view of Onuma et al. (US 5,287,173).

16. Regarding claim 5, the combined invention of Oguchi and Mendelson discloses all limitations of its parent, claim 1.

The combined invention of Oguchi and Mendelson does not expressly disclose the following, which Onuma teaches

- adjusting the gain of the color correction data based on the luminance data
[Fig. 1, ref. 1; Fig. 2; Col. 2, lines 34-60; Col. 4, lines 26-41]

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The combined invention of Oguchi and Mendelson is combinable with Onuma because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi and Mendelson with the teachings of Onuma as recited above. The motivation would have been to be able to adjust the projected luminance so as to achieve a seamless tiled display.

Therefore, it would have been obvious to combine Onuma with Oguchi and Mendelson to obtain the invention of claim 5.

17. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Mendelson et al. (US 6,559,826) as applied to claim 1 above, and further in view of Noguchi (US 6,101,272).

18. Regarding claim 6, the combined invention of Oguchi and Mendelson discloses all the limitations of its parent, claim 1.

The combined invention of Oguchi and Mendelson does not expressly disclose

- Wherein the communicating step comprises communicating each projector's chromaticity data is performed by communicating the data in the form of a transfer function matrix

However, Noguchi discloses performing gamut transformation and color correction (i.e., chromaticity data) using matrix operations [Col. 29, lines 39-44] and therefore teaches/suggests communicating the data in the form of a transfer function matrix.

The combined invention of Oguchi and Mendelson is combinable with Noguchi because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi and Mendelson with the teachings of Noguchi by communicating the chromaticity data in the form of a transfer function matrix. The motivation would have been to be because it is a compact form to represent the data and matrix operations can be easily implemented.

Therefore, it would have been obvious to combine Noguchi with Mendelson and Oguchi to obtain the invention of claim 6.

19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Mendelson et al. (US 6,559,826) as applied to claim 1 above, and further in view of Yoshikuni (JP 02-001351, with English abstract).

20. Regarding claim 7, the combined invention of Oguchi and Mendelson discloses all the limitations of its parent, claim 1.

The combined invention of Oguchi and Mendelson does not expressly disclose

- the chromaticity data is calculated from primary and white color values

However, Yoshikuni teaches performing color correction on primary and white colors

[English abstract: Constitution, lines 8-12]

The combined invention of Oguchi and Mendelson is combinable with Yoshikuni because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi and Mendelson with the teachings of Yoshikuni by calculating chromaticity data from primary and white colors. The motivation would have been to be because the input has been in R, G, and B (primary colors) and that correcting white color can extend the dynamic range of the output device when producing a color near white.

Therefore, it would have been obvious to combine Yoshikuni with Mendelson and Oguchi to obtain the invention of claim 7.

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21. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Mendelson et al. (US 6,559,826) as applied to claim 1 above, and further in view of Appel (US 5,337,410).

22. Regarding claims 8 and 9, the combined invention of Oguchi and Mendelson discloses all the limitations of their parent, claim 1.

The combined invention of Oguchi and Mendelson does not expressly disclose

- (claim 8) said determining and calculating color correction data steps performed by at least one component selected from the group consisting of: a processing system in data communication with each other, and at least one projector functioning at least partially as the main controller
- (claim 9) said determining and calculating color correction data steps (are) performed by one of said projectors

However, Appel discloses a multi-processor system in which a processing unit also acts as a master (i.e., a controller, and note that in Oguchi the controller performs the determining and calculating steps) [Col. 2, lines 10-12].

The combined invention of Oguchi and Mendelson is combinable with Appel because they have aspects that are from the same field of multi-processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi and Mendelson with the teachings of Appel

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by having one of the processing units act as the main controller. The motivation would have been to reduce the system cost.

Therefore, it would have been obvious to combine Appel with Oguchi and Mendelson with to obtain the inventions of claims 8 and 9.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Mendelson et al. (US 6,559,826) as applied to claim 1 above, and further in view of Gibson (US 5,253,043).

23. Regarding claim 11, the combined invention of Oguchi and Mendelson discloses all the limitations of it parent, claim 1.

The combined invention of Oguchi and Mendelson does not expressly teaches/suggests calculating color correction data from both primary and secondary colors. However, this limitation is taught by Gibson [Fig. 1; numeral 51; Col. 7, lines 52-66].

The combined invention of Oguchi and Mendelson is combinable with Gibson because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi and Mendelson with the teachings of Gibson by deriving color correction from both primary and secondary color. The suggestion/motivation would have been to provide more accurate color correction so that better image can be obtained.

Therefore, it would have been obvious to combine Gibson with Oguchi and Mendelson to obtain the invention of claim 11.

24. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976), Mendelson et al. (US 6,559,826) and Sato (US 6,467,910) as applied to claims 4, 10, 12, 13 and 16 above, and further in view of Gibson (US 5,253,043).

25. Regarding claim 18, the combined invention of Oguchi, Mendelson and Sato discloses all limitations of it parent, claim 12.

The combined invention of Oguchi and Mendelson does not expressly teaches/suggests deriving color correction data from both primary and secondary colors. However, this limitation is taught by Gibson [Fig. 1; numeral 51; Col. 7, lines 52-66].

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The combined invention of Oguchi, Mendelson and Sato is combinable with Gibson because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi, Mendelson and Sato with the teachings of Gibson by deriving color correction from both primary and secondary color. The motivation would have been to provide more accurate color correction so that better image can be obtained.

Therefore, it would have been obvious to combine Gibson with Oguchi, Mendelson and Sato to obtain the invention of claim 18.


Contact Information

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Yubin Hung
Patent Examiner
Art Unit 2624
May 7, 2007


05/07/07